Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended):   A computer-implemented method of detecting features on a semiconductor wafer comprising:

collecting data with a plurality of detectors that are positioned about the semiconductor wafer, **wherein at least one of the detectors is configured to collect data in a different manner from other detectors of the plurality of detectors and** wherein each detector collects one data frame for each of a plurality of device areas;

transmitting the data frames from each detector to a data distribution node, which is part of a set of data distribution nodes that are interconnected with crossbar connections that enable data collected by any of the plurality of detectors to be transferred to any of the data distribution nodes;

transferring a first data frame along a first data transfer path that connects a first and a second data distribution node of the set of data distribution nodes;

transferring a second data frame along a second data transfer path that connects the first and second data distribution nodes of the set of data distribution nodes;

routing the data frames from the data distribution nodes to processing nodes, wherein the transferring of data frames between data distribution nodes allows data from any one of the detectors to be routed to any one of the processing nodes;

aligning the data frames to facilitate pixel matching between the frames so that they correspond to the same regions of the wafer; and

processing the **aligned** data frames **using at least one of: row based analysis, composite-row based analysis, column based analysis, and composite column based analysis.**

~~within each of the processing nodes, wherein the processing within each processing node includes a row based analysis that involves,~~

~~generating a plurality of first composite images, each of the first composite images being made up of a row of data frames collected by one of the detectors, wherein each data frame in the row corresponds to a respective device area; and~~

~~comparing data frames with the first composite images in order to obtain defect~~ ~~information.~~

2 (Previously Presented):   A computer-implemented method as recited in claim 1 wherein a number of data transfer paths equals the number of detectors that is used to collect data.

3 (Original): A computer-implemented method as recited in claim 1 further comprising:
    buffering data frames within data distributor buffers within each data distribution node.

4 (Original): A computer-implemented method as recited in claim 1 wherein each detector collects data for each of three or more device areas.

5 (Cancelled).

6 (Previously Presented):   A computer-implemented method as recited in claim 1 wherein the processing of data further comprises a composite-column based analysis that involves,
    generating a second composite image for each device area by combining the data frames collected by each detector corresponding to a specific device area; and
    comparing each of the second composite images in order to obtain defect information.

7 (Original):   A computer-implemented method as recited in claim 6 wherein the processing of data further comprises a row based analysis involving,
    for each detector, comparing the data frames collected for each of the plurality of device areas, wherein there are four or more device areas.

8 (Previously Presented):   A computer-implemented method as recited in claim 7 wherein the processing of data further comprises a column based analysis involving,
    comparing the data frames collected by each detector for one of the device areas.

9-10 (Cancelled).

11 (Previously Presented):   A computer-implemented method as recited in claim 6 wherein the processing of data further comprises a row based analysis involving,

for each detector, comparing the data frames collected for each of the plurality of device areas, wherein there are four or more device areas.

12 (Previously Presented):   A computer-implemented method as recited in claim 11 wherein the processing of data further comprises a column based analysis involving, comparing the data frames collected by each detector for one of the device areas.

13 (Currently Amended):   A semiconductor wafer inspection system comprising:

a semiconductor wafer having a plurality of device areas;

a plurality of detectors **each configured to obtain data using more than one manner of data collection and wherein the detectors are** positioned about a semiconductor wafer wherein each detector is configured to collect a data frame for each of the plurality of device areas;

a data distribution system that includes a plurality of data distribution nodes, at least one of the data distribution nodes configured to receive data frames from the detectors;

a plurality of data transfer paths connecting each of the data distribution nodes wherein at least some of the data transfer paths include crossbar connections between the data distribution nodes that enable data collected by any of the plurality of detectors to be transferred to any of the data distribution nodes and wherein each data transfer path transfers data frames collected by a respective detector;

a plurality of processing nodes configured to receive data frames from the data distribution system, the processing nodes configured to analyze the data frames, wherein the data transfer paths allow data frames collected by any one of the detectors to be routed to any one of the processing nodes; **and**

wherein each of the processing nodes are configured to **align the data frames and conduct parallel processing of the data frames using at least one of: row based analysis, composite-row based analysis, column based analysis, and composite column based analysis to identify defects.**

~~perform a row based analysis that involves,~~ .

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~~generating a plurality of first composite images, each of the first composite~~
~~images being made up of each of the data frames collected by one of the detectors,~~
~~wherein each data frame corresponds to a respective device area; and~~
~~comparing each of the first composite images in order to obtain defect~~
~~information.~~

14 (Original): A semiconductor wafer inspection system as recited in claim 13 wherein each data distribution node includes a data buffer for data frames collected by each of the detectors.

15 (Original): A semiconductor wafer inspection system as recited in claim 13 wherein each detector is configured to collect data from three or more device areas.

16 (Cancelled).

17 (Currently Amended):   A semiconductor wafer inspection system as recited in claim 25 ~~13~~ wherein each of the processing nodes are further configured to perform a composite-column based analysis that involves,

generating a second composite image for each device area by combining ~~the~~ a selected data frame from each stream of data frames collected by each detector corresponding to a specific device area; and

comparing each of the second composite images in order to obtain defect information.

18-19 (cancelled).

20 (new):   A computer-implemented method as recited in claim 1 wherein processing the data frames comprises row based analysis within each of the processing nodes, each node processing a stream of the data frames received from a specified detector the frames comprising a row of data frames collected by the specified detector to generate a first composite row-based image and wherein each data frame in the row corresponds to a respective device area; and

wherein each data frame in the row is compared to the first composite row-based image in order to identify defects in the device area.

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21 (new):   A computer-implemented method as recited in claim 20 wherein processing the data frames further comprises composite row based analysis of the data frames generated by the plurality of sensors, wherein a node processes a stream of the data frames received from other detectors of the plurality of detectors wherein the frames comprise rows of data frames collected by other detectors of the plurality of detectors to generate corresponding composite row-based images wherein each of the data frames corresponds to a respective device area; and

wherein each composite row-based image is compared with other composite row-based images in order to identify defects in the device area.

22 (new):   A computer-implemented method as recited in claim 1 wherein processing the data frames comprises column based analysis within each of the processing nodes, each node processing a plurality of the data frames received from a plurality of detectors, wherein each detector generates a stream of data frames with each data frame corresponding to a device area, wherein a first data frame of each stream of data frames is compared in order to identify defects in the device area.

23 (new):   A computer-implemented method as recited in claim 1 wherein each detector generates a stream of data frames with each data frame corresponding to a device area and wherein processing the data frames comprises composite column-based analysis within each of the processing nodes, each node combining a plurality of the data frames received from the plurality of detectors, wherein in a first processing node a first data frame of each stream of data frames is combined to form a first composite image and wherein a next of the plurality of processing nodes combines a plurality of next data frames of the stream of data frames received from the detectors to form a next composite image, and

wherein the first composite image is compared with the next composite image in order to identify defects in the device.

24 (new):   A computer-implemented method as recited in claim 1 wherein processing the **aligned** data frames is conducted in parallel using a plurality of data processing nodes.

25 (new):   The computer-implemented method of Claim 1, wherein collecting data with a plurality of detectors includes collecting the data using different types of detectors;

and wherein processing the aligned data frames includes processing the data frames collected by the different types of detectors together.

26 (new):   A semiconductor wafer inspection system as recited in claim 13 wherein the processing nodes perform a row based analysis that involves,

generating a plurality of first row-based composite images, wherein each of the first row-based composite images are formed from a stream of data frames collected by one of the detectors, wherein each data frame corresponds to a respective device area; and

comparing each of the data frames first row-based composite images in order to obtain defect information.

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